



File Code: **1940 Montoring**

Date: **7/10/14**

Subject: **Leverich Canyon Travel Plan and Fish Barrier Implementation**

To: **Bozeman District Ranger**

On August 14, 2013 an Implementation Monitoring Review was held for Travel Plan-related and fisheries projects in Leverich Canyon. In attendance were Lisa Stoeffler, Aaron Mayville, Bruce Roberts, Wendi Urie, Brian McNeil, and Dale White. Travel Plan implementation in Leverich Canyon consisted of road and trail decommissioning and the construction of new trail suitable for mountain biking as well as use by hikers and equestrians. These activities took place over several years beginning in 2008. Fisheries projects included construction of a fish barrier on Leverich Creek and the removal of non-native brook trout from the upper reaches of Leverich Creek (i.e, above the barrier site). Brook trout removal was conducted from 2009-2012. The fish barrier was constructed in 2011.

Travel Plan project objectives included the following:

- Close and rehabilitate existing roads and trails that are in excess to administrative, recreational, and access needs.
- Close and rehabilitate existing non-system trails not otherwise designated for public travel.
- To improve water quality in Leverich Creek, decommission a segment of existing trail which closely parallels Leverich Creek and relocate the trail away from the stream channel.
- Construct a trail with grade and layout suitable for mountain bike travel and stable/sustainable under heavy use.

Fisheries project objectives included the following:

- Remove non-native brook trout from the upper reaches of Leverich Creek using mechanical methods including electrofishing and trapping. Continue removal efforts until brook trout are eradicated from the project reach.
- Construct a barrier to upstream fish migration at the lower end of the project reach to prevent future upstream movement of non-native trout into the drainage.

The process for this review consisted of the following:

- Identification of project objectives and development of monitoring review rating items. Sources included the Gallatin National Forest Travel Plan (2006), an Environmental Assessment (developed by Montana FWP for the fisheries projects), and Bozeman Ranger District records.
- Field review of the Leverich Canyon project areas.
- Team ratings (consensus) for application and effectiveness of BMP's observed.
- Team recommendations for future GNF projects



Implementation and effectiveness of rating items was evaluated using a modified form of the Forestry BMP review protocol developed by the Montana DNRC. The application and effectiveness rating system consisted of the following scoring system:

<b>Application</b>	<b>4 points.</b> Operation meets requirements of objective or measure
	<b>3 points.</b> Minor departure from objective or measure, requirements mostly met
	<b>2 points.</b> Major departure from objective or measure, requirements marginally/barely met
	<b>1 point.</b> Gross neglect of objective or measure, requirements not met at all

<b>Effectiveness</b>	<b>4 points.</b> <u>Objective:</u> Completely met <u>Mitigation Measure:</u> Adequate Protection of resources, effective
	<b>3 points:</b> <u>Objective:</u> Substantially met <u>Mitigation Measure:</u> Minor & temporary impacts on resources, moderately effective
	<b>2 points:</b> <u>Objective:</u> Partially or minimally met <u>Mitigation Measure:</u> Major & temporary or minor & prolonged impacts on resources, slightly effective
	<b>1 point:</b> <u>Objective:</u> Not met at all <u>Mitigation Measure:</u> Major and prolonged impacts on resources, not effective

## EVALUATION WORKSHEET

<u>Evaluation Items - BMP's</u>	<u>Source</u>	<u>Applic</u>	<u>Effect</u>	<u>Comments</u>
<b>Road and Trail Construction/Decommissioning</b>				
1) Close and rehabilitate existing roads that are in excess to administrative, recreation, and access needs	Travel Management Plan FIES, page I-11	4	4	See Photos 1-2
2) Close and rehabilitate existing non-system trails not otherwise designated for public travel.	Travel Management Plan FIES, page I-11	4	4	See Photos 1-2
3) Construct trail with grade and layout suitable for heavy use by mountain bikes.	Bozeman Ranger District	4	4	Trail has remained stable under very heavy mountain bike use. Will need consistent monitoring and timely repair/modification due to level of use. See Photo 3

Removal of Nonnative Trout and Construction of a Migration Barrier				
4) Remove nonnative brook trout ( <i>Salvelinus fontinalis</i> ) from the upper reaches of Leverich Creek using mechanical methods including electrofishing and trapping. Continue removal efforts until brook trout are eradicated from the project reach.	Environmental Assessment Decision Notice (MFWP)	4	4	
5) Construct a barrier to upstream fish migration at the lower end of the project reach to prevent additional movement of nonnative trout into the drainage.	Environmental Assessment Decision Notice (MFWP)	4	4	
6) Minimize disturbance outside of the final structure footprint. Restore channel bank and bed that is disturbed during construction	124 Permit	4	4	See Photos 4-5
7) All disturbed stream banks and adjacent areas created by the construction activity shall be protected with erosion control measures during construction. These areas shall be reclaimed with appropriate erosion control measures and vegetated to provide long-term erosion control.	DEQ 318 Authorization	4	4	See Photos 4-5



**Photo 1. Decommissioned non-system trail**



**Photo 2. Decommissioned road bed**





**Photo 3. Segment of trail offering optional routes to accommodate varied mountain bike rider skill levels**



**Photo 4. Outlet of fish barrier/box culvert on Leverich Canyon Road**





Photo 5. Intlet of fish barrier/box culvert on Leverich Canyon Road

### ***Conclusions***

1. The overall goals of the Travel Plan-related and fisheries projects were met, including the following.
  - Excess and non-system roads and trails were closed and successfully rehabilitated.
  - A trail with grade and layout suitable for heavy use by mountain bikes was constructed.
  - Brook trout were removed from the upper reaches of Leverich Creek and a fish barrier was installed to prevent future immigration by non-native fish.
2. Partnership with local mountain bike groups led to a better trail overall. The mountain bike groups provided significant volunteer labor and routing input during new trail construction. Some negotiation took place between the groups and the FS, particularly with respect to trail routing and steepness, with the outcome being a compromise between resource impacts and trail bed sustainability versus providing a challenging riding experience. At one point, a segment of trail constructed by the volunteer group had to be rehabilitated because the FS felt it was too steep and would lead to erosion problems. Overall, however, the result is a sustainable and very popular trail.
3. Establishment of user-created trails, which had been prevalent prior to this project, has not been a significant problem since the new trails were constructed.
4. Construction of the fish barrier met all requirements of the DEQ 124 Permit and 318 Authorization.

5. There have been unintended consequences of the new trail system, including the following.
  - Some local landowners have expressed unhappiness over the greatly increased traffic on Leverich Canyon Road due to increased popularity of the trailhead.
  - Some hikers and equestrians have likely been displaced due to high mountain bike traffic on the trails.

### ***Recommendations***

1. Involve local mountain biking advocates in future trail layout and construction processes as they contribute both valuable insights into trail layout and volunteer labor for trail construction. Make communication of objectives and constraints clear and involve FS personnel continuously in the route layout/construction process to ensure that the resulting trail meets FS standards for sustainability and resource protection.
2. Consider constructing trails or trail segments for beginner and intermediate level mountain biker riders.
3. Because the Leverich Canyon trails are extremely popular and heavily used, provide consistent monitoring and timely trail repair/modification to avoid excessive impacts on resources.
4. Consider instituting a mandatory direction of travel on the loop portion of the trail to improve the safety of bike riders and other trail users.

Dale White  
Forest Hydrologist